# Electronic Automated Laboratory Reporting of Communicable Disease & Environmental Laboratory Results to Multiple Programs and Locations by a Local Public Health Laboratory

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#### Abstract

Neighborhood Services. Chlamydia and gonorrhea test results, with demographic Prevention Program, quarterly. Recently, as part of the national effort for Electronic Laboratory Reporting (ELR), MHDL accomplished secure and daily transmission of Division of Public Health.

### Introduction

A local public health agency, such as the Milwaukee Health Department (MHD), has a team of public health professionals "under one roof" working in concert and in real time to address public health issues. The staff includes food and physicians, clinic nurses, administrators and laboratory scientists. A Laboratory Information System (LIS) has the capability to facilitate information/data exchange among staff to enhance public health response to many local issues while increasing laboratory efficiency. The City of Milwaukee Health Department Laboratory's (MHDL) LIS has been online since December 1996. Recently, due to directed grants and budget constraints, MHDL facilitated distant automated reporting to 11 locations within the department and to the State. As necessary, the appropriate staff were provided secure read-only LIS rights to facilitate information exchange. The LIS also facilitates effective extraction and management of data for local laboratory surveillance reports as well as data reporting to external agencies.

#### Laboratory Overview

The City of Milwaukee Public Health Laboratory (MHDL) is a 16,000 ft2 newly renovated (1999) facility on the 2nd floor of the Zeidler Municipal Building (ZMB). There are 29 staff (21 technical staff) performing >80,000 tests annually. Approximately 85% of these tests, which are mostly microbiological and lead agencies and laboratories in metro-Milwaukee (pop. ~1.5 million). This generates an annual revenue for the City of approximately \$200,000 - \$300,000.

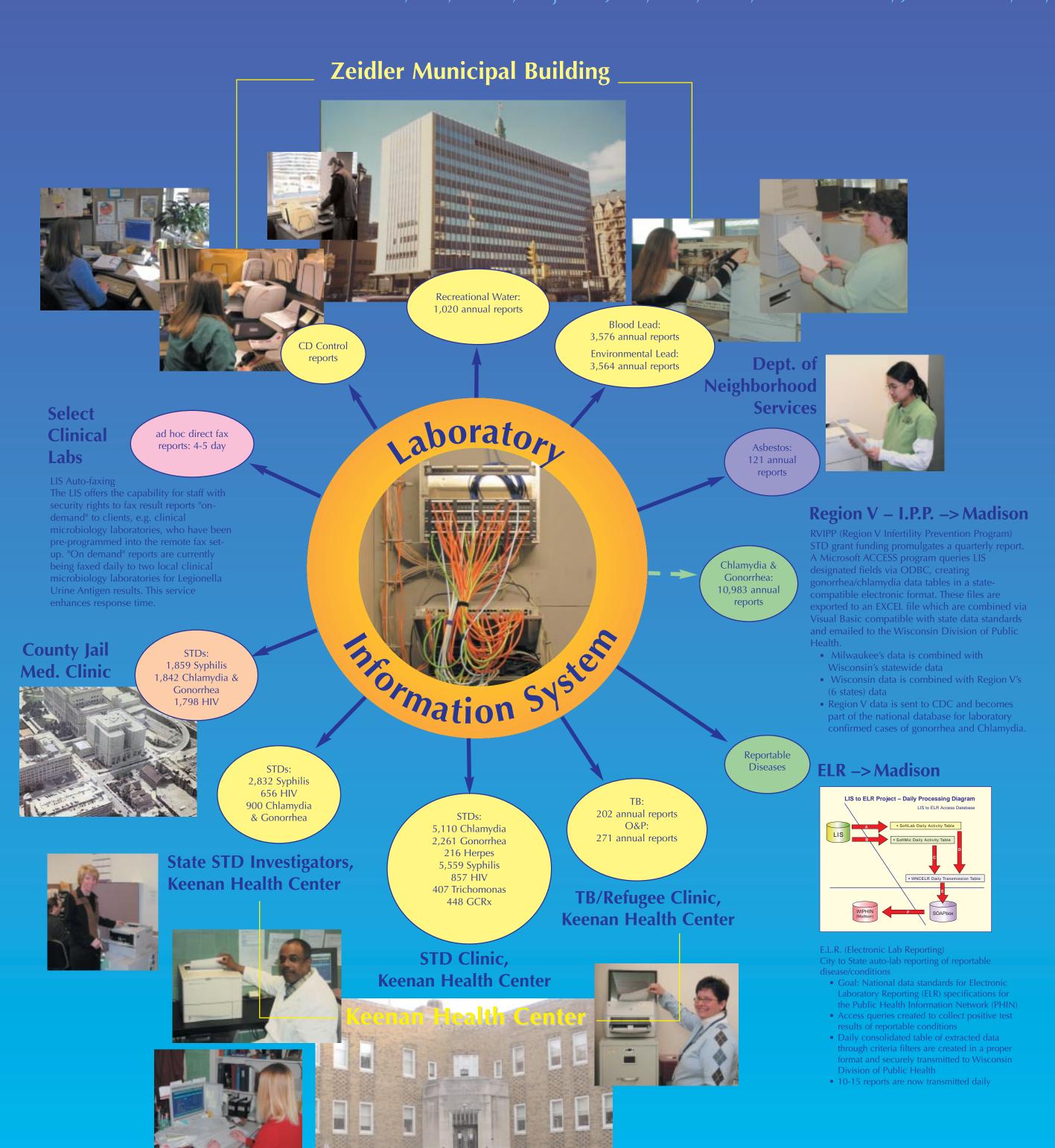
Over the recent 2-year span, the laboratory has received well over \$1,000,000 in various grant support in areas such as: Bioterrorism Preparedness, Lead Poisoning Prevention, Sexually Transmitted Disease Prevention, Asthma Research, and Beach

#### LIS Description

(Soft Computer Consultants, Inc., SCC)

Since December of 1996, 95% of all laboratory tests, clinical and environmental, are entered into the LIS. In addition to routine reports, the system has SQL and an "epidemiology module" for creating a variety of flexible "ad hoc" reports and queries on an as-needed basis.

- Characteristics of the system include:
- IBM pSeries 610 Model 6E1with 2, 1-Way Power 3-II 450 MHz processors, 2GB RAM, 109.2GB hard disk space configured in RAID-5,
- 72.8 GB Mirrored Disk, AIX (UNIX) 5.2 OS Programming languages: C and db\_VISTA
- Multiple workstation
- Dedicated data entry terminals 15 report dedicated laser printers
- 12 specimen label printers with barcode capability
- Specific time-schedule result report printing
- Off-site remote result printing
- Ad hoc report fax capability
- Statistical, epidemiological and trending report functionality
- Instant result query
- Fully integrated security module
- Greater than 60,000 entries annually with 500,000 online searchable results



### **Impact of LIS Auto-Reporting to Health Department Customers Clinical Impact of LIS** • Communicable Disease Test Reports

- \* Epi staff online look-up 5-10X/week
- Example #1: phone call > look up resulted in detection of a 4
- vear old w/diarrhea and an alert to a day care center • Example #2: A school gives epi staff a list of students w/diarrhea:
- \* Auto-printed reports are attached to State reportable disease form for official reporting (auto-printing has expedited reporting process).

### • STD Test Reports

- 40 reports per day; 1/3 to 1/2 inmates stay 1-2 days only
- Treatment within 24 hours of samples taken
- Example #1: On short notice: County inmate transfer to House of Corrections: positive test detected and treated prior to transfer.
- Example #2: recently 8 of 28 patients positive and treated within
- Anecdotally fast test turnaround time snowballs compliance
- through inmate peer interactions/communications
- Epi staff reports new use if LIS: "can't live without it"
- Clients call in for results: look up is immediate
- Blood Lead Tests
- \* Results are sent to primary care physicians
- \* Fast turnaround allows for faster treatment if needed
- \* Results in 1-2 days rather than almost 1-week \* Results posted sooner with the State refugee program and patient

\* Auto-printing, up to 25/mo., major improvement over previous snail-

#### **Environmental Impact of LIS** Recreational Water Testing

- \* Daily beach reports to epi staff
- \* Beach results:
- Entered immediately into regional beach data public website Results phoned in to County hotline
- County notified with appropriate advisory/posting Environmental Lead Testing
- \* 12-15 reports auto-printed per day
- needed
  - \* Online searchable results
  - Immediate access for inspectors Rapid turnaround critical for abatement contractor payment

#### Asbestos Testing \* "Rush" test results are auto-printed same day

\* Reports printed are auto-printed inspector-specific (5-inspectors) \* Major improvement over previous snail-mail process

## **Statewide TB & Virus reporting**

## **Bi-Monthly Laboratory Summary**

**Updates to the Medical Community** 

#### **Laboratory Information System**

MHDL responds, in real time and in-house, to local epidemiologists, inspectors, policy makers and medical teams as they evaluate and respond to local public health problems, natural or man made, as well as provides data for state and national programs. In addition to distant-printing of automated hard copy laboratory reports, non-laboratory staff throughout the department's clinics have read-only rights for their particular needs. The LIS currently contains a database of approximately 500,000 laboratory entries. This allows a variety of health department employees to immediately respond to queries from other health care providers related to health department clients or other public health issues.

#### Laboratory Surveillance Information/Data

MHDL provides laboratory surveillance information/data to a variety of local, state, federal and one international agency as well as programs and health care providers. The LIS is the key to accessing and compiling data into useful information for reports, graphs, and other electronic formats to meet the needs of the department and of the public health community.

## **eLEXNET** (electronic exchange network)

PHLIS (Public Health

PHLIS, a computer-based national

ZMB, 3rd Floor

Dashboard

TB & Virus

email report

Website

As of January 2005, there are 113 federal, sta

and local laboratories in 50 states that have oined the eLEXNET partnership, with 83 activel

Laboratory

Surveillance

**Communications** 

- Antibiotic Residues, Chemical Compounds

**Public Health eLab Network** 

of metro-Milwaukee

- >110 messages from MHDL to Network since 1998

## E-lab Network

(LRN) Bioterrorism Preparedness

**National Laboratory Response Network** 

- Laboratory Response

#### **Health Alert Network (HAN)**

Health Alert

### CDC Enterovirus and Gonococcal

**Antimicrobial Resistance Surveillance** 

### **Laboratory Website**

W.H.O.

sentinel

lab report

### W.H.O. sentinel influenza lab report



Tom Barrett, Mayor, City of Milwaukee Bevan K. Baker, CHE, Commissioner of Health,

#### City of Milwaukee Health Department Nancy Hills, MHD Graphics

Support from Wisconsin's Response to Bioterrorism Preparedness Cooperative Agreement Grant to Milwaukee in support of Electronic Laboratory Reporting.

February 2005 City of Milwaukee Health Department